

Amendments to the Claims

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims:

1. (Currently amended) Apparatus suitable for treating a vascular occlusion comprising fibrin strands, the apparatus comprising:

a thrombectomy wire having proximal and distal ends and at least one lumen extending for at least a portion thereof; and

at least one deployable wire having proximal and distal ends, the deployable wire having a contracted state that is substantially flush with the thrombectomy wire and a deployed state wherein the deployable wire extends radially outward from the thrombectomy wire,

wherein at least a portion of the deployable wire is located within the at least one lumen and is coupled to the thrombectomy wire so as to prevent relative rotation between the proximal and distal ends of the deployable wire, and so that rotation of the thrombectomy wire is transmitted to the deployable wire to engage fibrin strands of the occlusion.

2. (Original) The apparatus of claim 1 wherein the deployable wire comprises a shape-memory material.

3. (Withdrawn) The apparatus of claim 1 wherein the proximal and distal ends of the deployable wire are affixed to the thrombectomy wire.

4. (Withdrawn) The apparatus of claim 3 further comprising a tubular member, configured to longitudinally slide over the thrombectomy wire and being adapted to contract the deployable wire when disposed in a distalmost position.

5. (Original) The apparatus of claim 1 wherein the distal end of the deployable wire is affixed to the thrombectomy wire and the proximal end of the deployable wire is affixed to a sliding member, the sliding member configured to slide longitudinally relative to the thrombectomy wire.

6. (Original) The apparatus of claim 5 wherein the deployable wire comprises at least one loop that surrounds the thrombectomy wire in the deployed state.
7. (Original) The apparatus of claim 1 wherein the deployable wire comprises a plurality of arrow-shaped wires having proximal and distal ends in the deployed state.
8. (Original) The apparatus of claim 7 wherein the distal ends of the arrow-shaped wires are affixed to each other at a distal point, and the proximal ends of the arrow-shaped wires connect to the thrombectomy wire.
9. (Original) The apparatus of claim 8 further comprising a tubular member configured to slide longitudinally relative to the tubular member and being adapted to contract the plurality of arrow-shaped wires when disposed in a distalmost position.
10. (Withdrawn) Apparatus suitable for treating a vascular occlusion using rotational engagement with the occlusion, the apparatus comprising:
 - a catheter having proximal and distal ends, and a first lumen extending therebetween; and
 - at least one deployable wire having proximal and distal ends, the deployable wire having a contracted state that is substantially flush with the catheter and a deployed state wherein the deployable wire extends radially outward from the catheter.
11. (Withdrawn) The apparatus of claim 10 wherein the deployable wire comprises a shape-memory material.
12. (Withdrawn) The apparatus of claim 10 wherein the catheter further comprises:
 - a second lumen; and
 - at least one fluid delivery port disposed in a lateral surface of the catheter.
13. (Withdrawn) The apparatus of claim 10 further comprising:

a proximal body having a threaded groove; and

a rotational member configured to rotate within the groove, the rotational member being in communication with the proximal end of the catheter.

14. (Withdrawn) The apparatus of claim 13 further comprising a thumb ring in communication with the rotational member, the thumb ring configured to translate a force to the rotational member to distally advance the rotational member within the groove.

15. (Withdrawn) The apparatus of claim 14 further comprising a spring disposed in the proximal body, the spring configured to provide a resistance force that returns the rotational member to a proximal position.

16. (Withdrawn) The apparatus of claim 10 further comprising:

a deployment slot disposed in a lateral surface of the proximal body;

a deployment knob comprising a rounded pin, the deployment knob configured to longitudinally move within the deployment slot; and

a ring affixed to the proximal end of the deployable wire, the ring comprising a groove configured to engage the rounded pin of the deployment knob to actuate the deployable wire.

17. (Withdrawn) A method for removing a vascular occlusion, the method comprising:

providing apparatus comprising a thrombectomy wire having proximal and distal ends, and at least one deployable wire having proximal and distal ends, the deployable wire being provided in a contracted state that is substantially flush with the thrombectomy wire;

piercing the occlusion with the distal end of the thrombectomy wire;

positioning the deployable wire in the contracted state within the occlusion;

deploying the deployable wire within the occlusion; and

rotating the deployable wire to engage and wrap and the occlusion around the deployable wire.

18. (Withdrawn) The method of claim 17 wherein deploying the deployable wire comprises proximally retracting a tubular member.

19. (Withdrawn) A method for removing a vascular occlusion, the method comprising:

providing apparatus comprising a catheter having proximal and distal ends and a first lumen extending therebetween, and at least one deployable wire having proximal and distal ends, the deployable wire being provided in a contracted state that is substantially flush with the catheter;

piercing the occlusion with an atraumatic tip disposed at the distal end of the catheter;

positioning the distal end of the deployable wire within the occlusion in the contracted state;

deploying the deployable wire within the occlusion and

rotating the deployable wire to engage and wrap and the occlusion around the deployable wire.

20. (Withdrawn) The method of claim 19 wherein rotating the deployable wire comprises rotating the catheter, the catheter being in communication with the deployable wire.

21. (Withdrawn) The apparatus of claim 1 wherein the thrombectomy wire further comprises:

a lumen extending between the proximal and distal ends; and

at least one fluid delivery port disposed in a lateral surface of the thrombectomy wire adjacent to the at least one deployable wire.

22. (Previously presented) The apparatus of claim 1 further comprising:

a proximal body having a threaded groove; and

a rotational member configured to rotate within the groove, the rotational member being in communication with the proximal end of the thrombectomy wire.

23. (Previously presented) The apparatus of claim 22 further comprising a thumb ring in communication with the rotational member, the thumb ring configured to translate a force to the rotational member to distally advance the rotational member within the groove.

24. (Withdrawn) The apparatus of claim 23 further comprising a spring disposed in the proximal body, the spring configured to provide a resistance force that returns the rotational member to a proximal position.

25. (Previously presented) The apparatus of claim 1 further comprising:

a deployment slot disposed in a lateral surface of the proximal body;

a deployment knob comprising a rounded pin, the deployment knob configured to longitudinally move within the deployment slot; and

a ring affixed to the proximal end of the deployable wire, the ring comprising a groove configured to engage the rounded pin of the deployment knob to actuate the deployable wire.

26. (Currently amended) Apparatus suitable for treating a vascular occlusion comprising fibrin strands, the apparatus comprising:

a thrombectomy wire having proximal and distal ends, an aperture disposed in a distal region of the thrombectomy wire spaced apart from the distal end, and a lumen extending through the thrombectomy wire from the proximal end to the aperture;

a handle coupled to the proximal end of the thrombectomy wire; and

at least one deployable wire disposed within the lumen so that a distal region of the deployable wire having a proximal end coupled to the handle and a distal end affixed to the thrombectomy wire, the deployable wire having a

contracted state wherein the distal region is substantially flush with the thrombectomy wire and a deployed state wherein the distal region extends radially outward from the thrombectomy wire,

wherein the deployable wire is coupled to the thrombectomy wire so that rotation of the thrombectomy wire is transmitted to the deployable wire to engage fibrin strands of the occlusion.

27 (Previously presented) The apparatus of claim 26 wherein the deployable wire comprises a shape-memory material.

28. (Previously presented) The apparatus of claim 26 further comprising a tubular member, the tubular member configured to longitudinally slide over the thrombectomy wire and being adapted to contract the deployable wire when disposed in a distalmost position.

29. (Previously presented) The apparatus of claim 26 wherein the deployable wire comprises at least one loop that surrounds the thrombectomy wire in the deployed state.

30. (Previously presented) The apparatus of claim 26 wherein the deployable wire assumes an arrow-head shaped form in the deployed state.

31. (Withdrawn) The apparatus of claim 26 wherein the thrombectomy wire further comprises:

a second lumen extending between the proximal and distal ends; and

a fluid delivery port disposed in a lateral surface of the thrombectomy wire adjacent to the at least one deployable wire, the fluid delivery port in communication with the second lumen.

32. (Previously presented) The apparatus of claim 26 further comprising:

a threaded groove disposed within the handle; and

a rotational member configured to rotate within the groove, the rotational member being in communication with the proximal end of the thrombectomy wire.

33. (Previously presented) The apparatus of claim 32 further comprising a thumb ring in communication with the rotational member, the thumb ring configured to translate a force to the rotational member to distally advance the rotational member within the groove.

34. (Withdrawn) The apparatus of claim 33 further comprising a spring disposed in the handle, the spring configured to provide a resistance force that returns the rotational member to a proximal position.

35. (Previously presented) The apparatus of claim 26 further comprising:

a deployment slot disposed in a lateral surface of the handle;

a deployment knob comprising a rounded pin, the deployment knob configured to longitudinally move within the deployment slot; and

a ring affixed to the proximal end of the deployable wire, the ring comprising a groove configured to engage the rounded pin of the deployment knob to actuate the deployable wire.